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Abstract

Facility requirements are presented for a school for severely physically handicapped children to be built fcr the Human Resources Foundation. Consideration is given to--(1) the educational program, (2) the concept of having classrooms acccmmodate a series of groups of pupils compatible as to social and age needs, yet flexible as to instructicnal techniques and subject matter, (3) spaces required to implement the concept, and (4) organization of spaces for the schcol components (lower, middle, and upper schools). Facility and space requirements are specified for the school's science classroom, arts and crafts room, homemaking room, instrumental music room, instructional materials center, and administrative areas. Diagrammatic representations are included. (FS)

PROGRAM OF REQUIREMENTS

for

A SCHOOL FOR SEVERELY PHYSICALLY HANDICAPPED

for

HUMAN RESOURCES FOUNDATION

Albertson, New York

March, 1963

Educational Research Services, Inc.

7 Holland Avenue, White Plains, New York

Educational
Research Services inc.
SCHOOL AND COLLEGE CONSULTANTS 7 HOLLAND AVENUE / WHITE PLAINS, NEW YORK

15 March 1963

Mr. Henry Viscardi, Jr.
President
Human Resources Foundation
Albertson, New York

Dear Mr. Viscardi:

We are transmitting herewith a program of requirements for a school for severely physically handicapped children to be built for the Human Resources Foundation.

We trust we have incorporated into this program the appropriate concepts developed out of the experience of your own and other organizations that are working with children who need such schools. The program should serve as the basis from which an architect can proceed.

Respectfully yours,

F. G. Cornell

Francis G. Cornell
President

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INTRODUCTION

The school, to operate under the aegis of the Human Resources Foundation, is to be designed for an ultimate capacity of 200 severely physically handicapped pupils. The pupils will be those for whom public schools ordinarily provide no more than home instruction. The physical handicaps characteristic of these pupils, whatever the medical origins, will be predominately of a motor or muscular control nature, not emotional disturbance or retardation.

Enrollment: Growth; Grade Levels to be Accommodated

Although the ultimate capacity is expected to be 200 pupils, this figure is to be reached by stages, with facilities to be built for approximately one third of the expected total in each of three phases. Since it is difficult to anticipate a rate of growth for a school of this type, phasing may be accelerated or delayed as later developments warrant; yet at any stage the facilities must provide adequately for all grade levels to be housed.

The grade levels will eventually range from pre-kindergarten through twelfth grade -- a 14-year school, in other words. A school presently being operated by the Human Resources Foundation contains slightly more than 20 pupils ranging from pre-kindergartners to eighth-graders; a few junior high pupils

are anticipated in the near future. These are currently accommodated in a single room in the Foundation's headquarters, where many of the operations of a one-room school are accentuated. As the enrollment increases the facilities are being increased, which should alleviate certain problems. But even if the enrollment reaches the full 200, the principal difficulty lies not in the fact that the pupils are physically handicapped, but remains the provision of a good yet economical 14-year school for a small enrollment.

Some Underlying Principles

The foregoing is in keeping with the Foundation's stated policy of preparing all pupils to cope with a normal environment, and in so doing to treat them, although they are handicapped, as nearly as possible as normal children. Thus, while in certain minor respects, such as height of work surfaces, some items of equipment may differ from everyday standards, the equipment should in all major respects be of types appropriate for educational facilities of a high quality in any good school system. No special devices or plan characteristics are to be included that are not absolutely essential for pupils having the types of handicaps described and all should be readily available with slight adaptation in a good public school anywhere.

One purpose of the Foundation's school is to demonstrate the extent to which physically handicapped pupils can be educated in a "normal" educational environment, with no more than minor, inexpensive adjustments of facilities.

Another is to bring children who, because of severe physical handicaps, have been socially and educationally handicapped as well, up at least to

the norm for the non-handicapped, within the limits of individual capacity: Some children may be able to transfer from the Foundation school to conventional schools at certain grade levels.

Still another is to seek continually for improved ways of reaching such goals. The Foundation's school is in this respect a continuing large-scale research project, the facilities for which may have to be altered from year to year as different techniques of organization, of teaching, of the facilities themselves, are tried out, adopted, or discarded. It may ultimately occur that public schools, to illustrate by an extreme example, may be able to undertake full responsibility for educating severely handicapped pupils, in which case the Foundation's school will have worked itself out of its initial job so the facilities must be convertible to use for other aspects or phases of related research.

Yet it must be remembered that the facilities are to be designed to function as a school; furthermore, as an excellent school. Experience with schools for the non-handicapped has demonstrated many times that the excellencies of a school -- its facilities as well as its educational program -- are not measured by their cost. There can be no waste or extravagance in the Foundation's school. There need not be; neither should any reasonable facility for attaining educational excellence be omitted.

The Site

To obtain full value from the inspiration of close proximity to handicapped and successful adults, from vocational training opportunities already existing, and from research, medical and other facilities now available in the Human

Resources Foundation, the school is to be built on a limited site adjoining and connected to the Foundation building and the manufacturing plant of its parent organization, Abilities, Inc. This poses some problems which are included in the outline below.

Some Special Requirements

1. Due to the small total enrollment, all spaces in the school must serve several purposes in order to provide a full educational program without waste of facilities. It would be wasteful to provide conventionally complete, separate facilities for each subject or branch of a subject.

2. Since the pupils may be of varying ages at the time they enter the school, and since all will initially be, in greater or lesser degree, less advanced than non-handicapped pupils of comparable ages, much instruction must be individual rather than in conventional class groupings in order to bring them up to normal educational levels when they leave this school.

3. Certain considerations which should characterize any good school, but which are often disregarded or given only minimum attention, become essential for handicapped children. Examples include:

   a. Provision of facilities for instructional techniques which will enable teachers to work well with all pupils, individually and in groups

b. Miniaturization and concentration conveniently at points of use of many facilities (e.g., micro-chemistry; books and other teaching aids constantly circulating in teaching-learning spaces rather than concentrated in a conventional library or store room)

c. Spaces and equipment dimensioned according to actual need rather than to possibly faulty preconceptions, with the proviso that conventional, standard equipment items be employed wherever possible to teach pupils to cope with everyday environment (e.g., adequate safe passage between items of equipment; standard types of work surfaces of adequate area and appropriate height)

d. Circulation areas (corridors, etc.) to afford complete safety and protection from the elements

II

EDUCATIONAL PROGRAM

In a review of research as of 1959 on the education of children with crippling conditions and special health problems the following statement appeared:

> "... One is forcibly struck by a dearth of research studies and descriptive materials in the area of program administration, classroom management, curriculum development, methodology, and teacher education."*

There is nevertheless a growing body of knowledge relative to the physical and psychological characteristics of physically handicapped children which points to ways in which their educational requirements need not be denied. By the very nature of work with handicapped, it has become standard practice to conduct intensive programs of individual pupil diagnosis which take into account the social, emotional, intellectual as well as the physical states of each child. In this respect the school at Human Resources Foundation may be expected to have a head start on the typical American school system which generally does not have means of discovering the conditions, capacities and readiness for learning on which all good teaching must be based.

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* Frances P. Connor and I. Ignacy Goldberg. "Children with Crippling Conditions and Special Health Problems". Review of Educational Research 29: 471-96; December 1959.

Considerable progress has been made in the development of specific devices and techniques to accomodate physical disabilities which interfere with the usual learning and living activities in school. Outside of such considerations, the educational requirements of a school building for the handicapped should be no different from that of any school.

Some Special Educational Program Requirements

In two respects, however, the school facility at the Human Resources Foundation requires special planning:

1. It will be an experimental school -- experimental in the sense of developing and testing out educational programs to close the gap of knowledge cited in the quotation above, and

2. A small school in which the numbers of pupils at any level at any time cannot be predicted but in which the numbers at any level at any one time are certainly to be small

Both of these conditions imply flexibility in design -- flexibility to accommodate the kinds and numbers of individual groupings of children in the school and flexibility in the kinds of learning activities which will take place.

From the standpoint of economy -- not in the sense of dollars so much as in the sense of efficiency in learning -- the second point above has very significant bearing on the kind of facility required. For instance, it is very unlikely that the educational needs of 200 pupils on the kindergarten through high school levels will be met if grouped in the conventional grade groupings of kinder-

garten through 12. School grouping should be on the basis of educational need, not on medical diagnosis, chronological age, or some arbitrary convention of grade level as is generally practiced in American schools simply because too few schools have found better ways of providing education.

The teaching of reading is a case in point. Of any intellectually normal group of children who have been in school six years and who might be grouped as sixth grade, there may be expected to be as much as an eight-year range in reading level due to differing learning rates, some attributable to remediable factors and some not. Instruction in reading should be with homogeneous grouping on reading level, not on the basis of years in school. In fact, since no two students are at the same levels in reading the best homogeneous grouping is individual instruction.

Another case in point relates to the specialized instruction at the secondary level. An upper school of say grades 9 - 12 (or equivalent), if the 200 pupils are evenly divided, might have a total enrollment of 65. Of this number perhaps 15 may need general science, 10 or so biology, five chemistry, three physics and one or two some advanced science. In scheduling this science program, costs would be prohibitive with classes under 15. Certainly classes of five or fewer could be combined for instruction purposes.

We may thus expect:

1. Teaching by multiple-classes, e.g., more than one mathematics subject or science subject at the same period with the same teacher, or an ungraded primary group with a single teacher for

most subjects with special teachers as required

2. Almost continuous grouping and regrouping for instruction and learning on the basis of need and irrespective of grade level conventions

3. Emphasis upon group and individual aids to learning including educational TV, sound-film, programmed instruction media other than textbooks

Some Implications for Good Education

The following principles and their implications should help build a blueprint of the general features of human behaviors for which a good school building must be designed.

1. Children do not learn from a lecture or a book -- they learn only from what they do. They write to learn to write, spell to learn to spell, speak to learn to speak, etc. This implies activity -- some physical, some purely mental, some vicarious experience, some real life experience -- but active, not passive experience. Activities include: planning, deciding, analyzing, discussing, selecting, making, collecting, organizing, searching, reading, listening, watching, constructing, drawing, designing, practicing, displaying, speaking, reporting, storing. Newer techniques of programmed instruction make use of this principle in requiring the learner to do something (write a word, push a button on a teaching machine) at the presentation to him of each bit of information.

2. There are vast differences among pupils of the same age in an infinite variety of personality and intellectual characteristics related to formal school work. These include rates of learning various subjects, interests, how they fit into the social situation of the classroom group and individuals in it, their views of the teacher, their conceptions of self in relation to authority, their capabilities of adapting and adjusting to new situations, their physical and emotional well-being, their readiness for a specific learning at a specific time, etc.

The implication is that efficient learning in a school situation requires a great variety of types of learning experience. Moreover, spaces must be such that learners may be doing many different kinds of things at a given time. As all teachers know, even if a given class group is listening to a lecture or viewing a film (or TV) -- all at the same time -- what they are doing, in the intellectual sense, is not the same. At the lecture or the film showing some are bored, others are fascinated -- some understand, others do not -- some are attentive, other daydream, etc.

All this means continuous re-examination of the degree to which the various devices and attacks upon teaching are effective in producing the desired outcomes for a particular group and the individuals in it. Good teaching requires a continuous adaptation of teaching methods to the characteristics of the learners. The approaches vary from individual counseling or tutoring to large-group presentation. The materials of instruction vary from time to time, from class to class, and subject to subject, but the textbook is not the sole medium of communication in teaching.

A further implication of this principle is the necessity of conveniences for many activities in which teachers must engage so that the progress of individual students may be determined, their intellectual, physical, social and other problems known and the proper remedial or other course of action prescribed.

For these reasons teachers need:

Places to store a wide variety of instructional devices

Places for consulting with other teachers concerned with the same student or group

Places for counseling of individual students

Places for group and individual testing

Places to file records on progress and characteristics of individual pupils

Places with varying types of environmental stimuli including spaces which isolate students from environment

3. Learning is more efficient and more effective if learners experience success more often than failure. This calls for skillful teaching, but also a physical environment which encourages learning. Primitive notions that creative talents are engendered by the tough school of "hard knocks" have not been borne out. Even in types of military training it has been shown that subjects learn more quickly and better if the learning situation produces satisfaction.

Thought must therefore be given to:

Avoiding the confining, cell-like enclosures of conventional classrooms by use of orientation, fenestration and other means so they open out rather than restrict

Providing ample display areas for student-created, not just teacher-created, products

Avoiding unsightly and unfriendly obstacles which children may meet passing from one area of the school to another or from their entrance to their stations

Using color imaginatively, for satisfactory esthetic effect upon pupils (rather than adults), avoiding dull, institutional colors

Employing heating and ventilation to provide proper atmosphere for work. Learning is work. Temperatures over 72 are not conducive to quiet work. Air conditioning is a must in areas to be used in summer months. Zoned heating is essential to provide low temperatures in physical activity areas.

Assuring safety and sanitation by avoiding exposure to radiation, water that is too hot, sharp corners, fire hazards, protruding obstacles in corridors and passageways

Some Emerging Educational Developments

There has been considerable experimentation in education in recent years and several developments of current interest have a bearing upon what the Human Resources Foundation school might be like in the future. Recent innovations in education include:

1. Revision of subject matter content, e.g., new materials in Science and Mathematics replacing the traditional ones; the introduction of foreign languages
2. Devices for greater adaptation to individual differences, e.g., improved pupil personnel programs, ability grouping, individual study plans, ungraded classes, programmed instruction, teaching machines, program enrichment, etc.
3. Plans for greater efficiency in use of teaching personnel, e.g.,

team teaching, use of closed-circuit television and television broadcasts, teacher aids

There is no way of knowing what will be adopted as the educational program in the Human Resources Foundation school of the future. Little can be said categorically about any of the new ideas about organizing schools and teaching except that there is evidence that each has proven useful in certain schools with certain groups of students and teachers under certain conditions. Such innovations as use of educational TV, for example, have had a great impact on some learners in some situations, but not in others. Schools which find ways properly to fit ETV and other visual-auditory devices into their programs will unquestionably benefit.

What this means for school planning with emphasis on the physically handicapped cannot be spelled out in detail. Some conclusions are evident:

1. Provide as much flexibility in spaces as possible
2. Plan to have rooms larger than conventional classrooms for possible future uses requiring more space
3. Have teaching station larger than formerly to allow for additions of counters, other work spaces and storage for new teaching aids and materials not immediately anticipated
4. Provide adequate storage space throughout the structure
5. Provide conference rooms and work spaces for teacher planning

6. Have ample electrical outlets in all rooms

7. Arrange for spaces in school components, in the library and elsewhere for independent study and research

8. Where feasible, design spaces for multiple use

9. Structural design should permit easy access to spaces where utilities (conduits, etc.) might be needed

10. Anticipate continuous technological obsolescence of electronic and similar teaching devices

11. Moveable furniture for flexibility

12. Moveable storage units which can be used for subdividing spaces so that groups of children can be working on different projects at the same time in the same room without interference from each other.

III

THE CONCEPT AND THE SPACES REQUIRED

The concepts developed to meet the needs of this relatively small school for physically handicapped children differ in some respects from those for a conventional school, although the end objective remains the same: to fit its pupils for living and working in a normal society and normal environment.

Thus the concept is not one of conventional classes in conventional classrooms, but of a series of groups of pupils compatible as to social and age needs yet flexible as to instructional techniques and subject-matter. Such an arrangement should afford maximum opportunity for individual instruction as well as group work. It also permits the school to be constructed in a series of units or components rather than all at once.

Three School Components

Therefore the principal learning areas should consist of three components, each providing space for approximately one third of the eventual total enrollment, or 60 to 65 pupils per component. Initially a single component may house pupils in the equivalent of pre-kindergarten through junior high school grades. As enrollment grows, successive components may be built. Eventually these may become the Lower, Middle and Upper Schools.

Typically, each teacher should be responsible for no more than 15

pupils. This means that each school component must provide the equivalent of four teaching stations arranged for maximum flexibility in use as described in subsequent chapters. Although some teaching stations in each component may have somewhat the nature of the conventional classroom part of the time, it should be possible on occasion for teachers and pupils to move relatively easily from one teaching station to another. Also budgetary limitations and other factors combine to make a separate cafeteria undesirable, so pupils will eat lunch in the same areas where they are learning.

Special Instructional Areas

These include spaces for science, for arts and crafts, for homemaking and for music. All must serve multiple purposes. All the sciences will be taught in a single laboratory-classroom which may also have to accommodate, in its seating area, instruction in other subjects. In the arts and crafts room there will be facilities not only for painting, drawing and craft work but also for simple shop work in wood and some metals. The homemaking room will have facilities for instruction in foods, clothing and home living in one space. The small music room will provide practice space, instructor's desk and music library all in one. Several of the teachers for these special areas may be part-time employees.

Instructional Materials Center

Rather than include a library only, the school will have an instructional materials center serving all three components and the special instructional areas. From this center books, source materials such as magazine articles,

illustrations, pictures and other documents, as well as various types of audio-visual aids, may be distributed to the instructional areas. Space should be provided for a limited number of pupils working in the center on special research and reference works. In addition, this is a logical place to locate the control room for an educational television system.

Administrative Spaces

These should include the essential offices, secretarial and conference spaces, some of which may also be used at times by research personnel. Also there is required a room in which small groups of student nurses, teachers and other visitors can meet and observe activities in the school components by means of closed-circuit television. The TV system may also be used in some types of educational and medical research.

Physical Education

Existing facilities in the Human Resources Foundation will be used for an adapted physical education program, of which physical therapy forms a substantial part. The existing facilities include a fully equipped pool, a gymnasium and locker spaces. Outdoor areas of the site are to be developed for recreation and games. This requires close coordination with future development planning of the Foundation and of Abilities, Inc.

Estimated Minimal Spaces Required

The following spaces are estimated to be the minimum required to accommodate this school for 200 or so severely physically handicapped children.

SPACE REQUIREMENTS

		Net Square Feet	
Three School Components			
	Each consisting of equivalent of four teaching stations of 15 pupils each including one teachers' workroom	3,000	
	Toilets, Clothing Storage	1,400	
	Area per School Component	4,400	
	Area per Three Components		13,200
Special Instructional Areas			
1	Science Classroom with Storage	1,200	
1	Arts & Crafts Room with Storage	1,200	
1	Homemaking Room	800	
1	Instrumental Music Practice Room with Storage	150	
			3,350
Instructional Materials Center			
1	Library-Reading Storage Area	800	
	Audio-Visual and Storage	200	
	TV Control	150	
			1,150

		Net Square Feet	
Administration			
1	Reception and Secretarial Area	200	
1	Principal's Office	150	
1	Guidance	150	
1	Health Room	200	
1	Conference and Observation Room	300	
			1,000
Estimated Total Net Area			18,700
Additional space for walls, corridors, mechanical equipment, custodial and service spaces, general storage			7,800
Estimated Gross Area			26,500

PHASING OF CONSTRUCTION

	Net Square Feet	
Phase I		
One School Component	4,400	
Instructional Materials Center	1,150	
Administration	1,000	
Special Classrooms	3,350	
		9,900
Phase II		
Second School Component	4,400	
		4,400
Phase III (or Phase II)		
Third School Component	4,400	
		4,400

IV

ORGANIZATION OF SPACES

The site is restricted, so that the ultimate building, including all three school components, must be as compact as possible. Within the building, all facilities must be on one floor level with no ramps or door saddles. Travel distances within the entire school must be reduced to minimum.

Relations between Elements

Each of the school components should be a complete entity, with its own entrance and toilets, clothing storage, etc. Each component's entrance should be reached via a roofed, open-sided bus-loading walkway designed to accommodate the special buses in which pupils will be transported. The buses have side and/or rear doors of double width, and are equipped with either power lifts or removable ramps for wheel chairs and wheeled litters. Curbs at bus-loading positions must be high enough to insure that the bus ramps are not too steeply sloped, yet of reasonable height for non-handicapped persons. Instead of a saddle at the entrance doors, slightly ramped walks are needed.

Clothing storage area should immediately adjoin each school component entrance. From the clothing area, the teaching stations should be entered directly. Toilets should likewise be directly accessible. Drinking fountains in these areas will serve pupils who are outdoors as well as indoors.

The special instructional spaces are to be directly accessible to two of the three ultimate school components.

Administrative area and instructional materials center must be closely adjoining for effective control and so that the television control room may be properly related to the conference and observation room. Both the instructional materials center and administration area must be easily accessible to all school components. In one sense, these areas are the heart of the school.

Corridors should be eliminated wherever possible. Where they must be used, the corridors should be short. Any corridors likely to be traversed by numbers of people must be at least eight feet wide; secondary corridors, five feet wide, to permit wheel chairs to pass safely.

Site Elements Related to the School

The limited site necessitates considerable ingenuity in design and development. It is desirable to connect the school by a covered walk to the Foundation building, with access to the Foundation's south entrance and thence to the existing gymnasium and swimming pool. Adjoining this entrance there is an existing terrace or patio which is to be taken into account in design. The adjoining manufacturing building of Abilities, Inc., is to be expanded shortly, contributing another factor to be considered.

The existing parking area is to be extended and may accommodate additional school staff and visitor parking. School buses may also be parked here. It may be possible to develop some hard-surfaced game areas adjoining parking

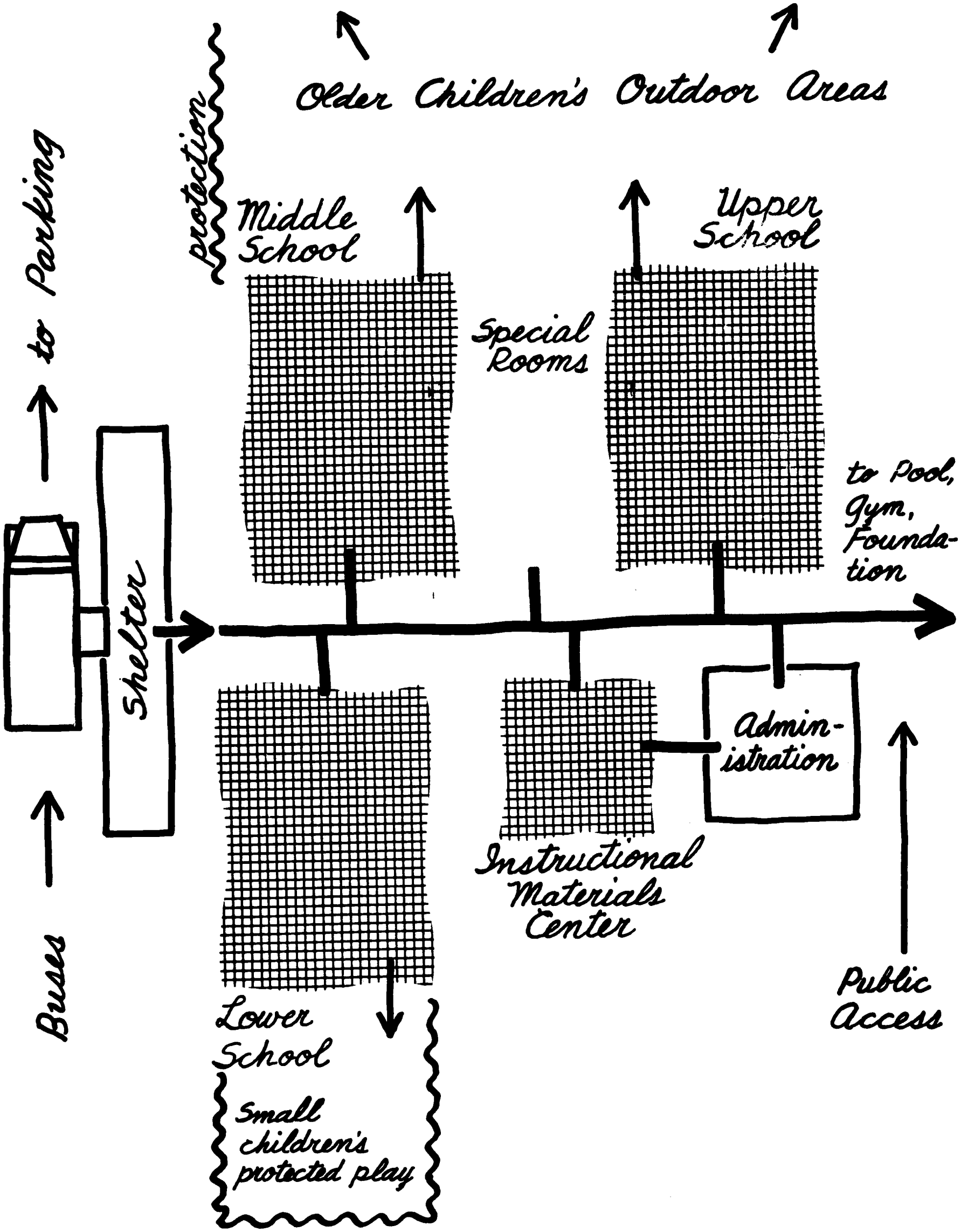
areas in such a manner as to serve double duty; i.e., part time for recreation and games, part time for parking. All areas used by the pupils must be carefully protected against vehicular traffic.

Types of outdoor activities in which handicapped pupils may engage include:

Studying
Reading
Sunbathing
Pre-school play
(blocks, wheel toys, etc.)
Ball games played in wheel chairs
(basketball, volley-ball, softball, etc.)
Clock or miniature golf
Nature walks
Science projects
Quoits, lawn bowling, shuffle board and
similar court games
Outdoor physical therapy

There is a considerable wooded area in the southwest corner of the site which may be developed for many of these purposes. A small stream or pond may be developed in this area.

Outdoor facilities for younger children should be close to the school for easy supervision, and separated from those for older children.



ORGANIZATION OF SPACES

V

SCHOOL COMPONENTS

The three school components should be identical. Experience in operating the first component may lead to changes in later construction, but architectural planning at the outset should be a sound yet flexible interpretation of the requirements. Ultimately they will become the Lower School, Middle School and Upper School.

Learning Spaces

Each component is to contain the equivalent of approximately four conventional teaching stations, though most of this should be arranged as to be easily divided into as many separate work and study areas as needed or expanded into one large space. Part of this space, 600 - 700 net square feet, is to be sufficiently isolated and protected from sound penetration, in or out, to serve the special purposes described below. The remaining space is to be in essence a single large space without permanent partitioning, subdivided, however, by casework. The casework between spaces should be relocatable so that month-to-month or even more frequent changes can be made as occasions demand.

Equipment and Space Needs

While most of the pupils will arrive at the school in wheel chairs, a few in wheeled litters, once they are inside, all who are capable are encouraged

to walk with braces or crutches for part or all of the school day. Some wheel chair pupils will thus be ambulatory at times. A few pupils may work part of the time at stand-up desks for therapeutic reasons. A number of pupils may have muscular difficulties with their upper extremities. The exact quantity of each type cannot be predicted in advance. Two or three of a typical group of 15 pupils may be in wheel chairs most of the school day, but as long as there is even one wheel chair certain facilities must be planned appropriately. One or two adjustable stand-up desks should be sufficient for each school component.

Aside from those at stand-up desks, all pupils will work at tables. As in any classroom, a range of heights is necessary, with the addition that 50 percent of the tables should be adjustable in height. Book racks under seats are not satisfactory for handicapped pupils; most book boxes under work surfaces are also undesirable because they interfere with wheel chairs. For such reasons, including book storage, work surfaces should be larger than the usual minimum desk top. A table 2-1/2 by 6 feet should accommodate two pupils satisfactorily.

Chairs should also be of varying heights and must be selected from standard types for exceptional sturdiness to withstand contact with metal braces. Metal rivet or bolt heads protruding through the upper surfaces of seats are to be avoided. Seat design should be such that pupils lacking control of their lower limbs will not slide forward.

Aisles within the teaching station should be at least 4 feet 8 inches wide to permit two wheel chairs, or two pupils using crutches, to pass safely, and to provide slightly more space than usual for getting in and out of chairs.

Cabinet work along walls and constituting partitions should have lower sections equipped with drawers and bins for supplies and student projects. Upper sections should have shelving, with shelves to be used by pupils fixed rather than adjustable since the shelves may be gripped by pupils who need support. High shelves will be of value only for dead storage or teacher use. Doors should be eliminated wherever they are likely to become hazards to safety. Where doors are used, catches should be magnetic rather than spring-type. Little counter space need be incorporated in cabinets, and where employed should have space beneath the counter completely open to accommodate wheel chairs.

In each school component there should be conveniently distributed three or four sinks with hot and cold water and lever-type faucets. Sink drain should be in a rear corner of the bowl, with trap and piping located to prevent interference with wheel chairs. Sink bowl should be shallow, with bottom surface insulated so wheel chair occupants will not burn their legs. Drinking fountains should not be incorporated in sink counters (see below, "Toilet and Clothing Storage Areas".)

Shape and dimensions of the four teaching stations should be developed around plan arrangements of the equipment described above. It should be possible to arrange pupil tables in different ways, maintaining adequate circulation space between equipment items, around the teacher's desk, and access to cabinets, chalkboard and tackboard.

Chalkboard, Tackboard, Pegboard

As in other learning activities, some pupils using chalkboard and

tackboard will be in wheel chairs, others erect on braces or crutches. Either requires approximately the same linear (horizontal) extent of chalkboard, approximately four feet per pupil. Chalkboard functions should be restricted primarily to communication by teachers or pupils. For individual study and learning there are many aids and media coming in to classroom use which reduce demand for chalkboard. Sixteen lineal feet of chalkboard distributed on walls or casework in each of approximately four areas of each component should be ample.

Wheel chair occupants can work sideways to a chalkboard mounted conventionally on a wall. There is no need for providing space under chalkboards for wheel chair footrests. The chalk trough should be conventional and of sturdy construction so pupils may grip it firmly when they need support.

Chalkboard mounting heights differ only slightly from those desirable for non-handicapped pupils, modified only by the needs of wheel chair occupants. The minimum chalkboard height for each age group, as shown in the accompanying table of Working Heights, will be satisfactory for those in wheel chairs. The upper portions of conventional four-foot-high chalkboards mounted at the minimum height will be satisfactory for the teacher and standing pupils. Mounting height should vary from station to station, being in one case appropriate for lower grades, in another for middle grades, and in a third for upper grades. If needed, a small, low, portable chalkboard may be introduced for pupils who must remain on litters.

Display space, consisting of tackboard and pegboard, should be ample in all learning spaces. Some of it should extend from baseboard to ceiling so young pupils and those in wheel chairs may use the lower portions, standing pupils

and teachers the upper portions. The highest portions may be used for semi-permanent displays. Certain tools and small utensils will be most accessible and useful when hung on pegboard hooks. Location of pegboard should be such that children who do not have full muscular control will not be likely to injure themselves.

The Acoustically Protected Teaching Station

In this area there are to be scheduled either activities which might cause disturbance in the remainder of the school components, or quiet, restful pursuits which might be disturbed by routine activities in other areas. Music, story-telling and the like are examples of the first; independent study and research, or rest periods for younger pupils, are examples of the second. This space should be surrounded by walls having sufficient mass or sound-reduction coefficients to reduce sound penetration, from within or without, by appreciable amounts. Since noise generated in this space will not be dissipated into other spaces, special attention must be paid to installing sufficient sound-absorptive surfacing in satisfactory locations, to prevent reverberation within the space. In all other respects, including equipment, circulation, room shape and dimensions, the requirements of the acoustically protected room are identical with those of the other teaching stations.

Toilet and Clothing Storage Areas

Separate toilet rooms should be provided for boys and girls, one each in each school component. A set of fixtures of juvenile size and mounting height should be installed in addition to those of normal dimensions as required. There

should be back-rests at all watercloset. In each toilet room, one watercloset for wheel chair occupants should be mounted on a four-inch high base, should have ample space on both sides and in front for maneuvering a wheel chair, and should have grab bars at hand height at rear and sides. At this toilet there should be a call-button so the user may call for assistance. This stall should have no door, but instead should be equipped with a heavy, easily cleaned, mildew-resistant curtain.

In the boys' toilet, a sturdy, horizontal grab bar should be installed at hand height above urinals.

Since some pupils will be incontinent, it is desirable to install in each toilet room a small cabinet containing four or five drawers to hold changes of underclothing, etc.

Lavatories should be mounted 30 inches above finished floor and equipped with long lever-handle faucet, swing spout and aerator to prevent splashing. Temperature of hot water should be kept to a safe maximum since many pupils may have imperfect sensory response and may burn themselves. Lavatories should not be closely spaced, but there is no need to allow room for wheel chairs alongside all lavatories. Paper towel dispenser, waste container and similar units should be at wheel chair height, and located to minimize movement within the lavatory area.

Circulation space within the toilet rooms should be ample. This is particularly important at the room entrances where the necessary baffles to vision must be located so that wheel chairs or crutches can be easily maneuvered. If space permits, separated entrance and exit ways are desirable.

Clothing storage area should be an enlarged lobby, entered directly from outdoors and immediately adjoining the teaching stations. Considerable ingenuity is called for in designing appropriate storage for outer clothing, girls' handbags, and such personal items as lunches which may be brought by pupils who are on special diets. Few pupils will be able to use storage units at or close to floor level. Some, but not all, students who can stand will be able to use high storage units. The bottom shelf or bottom of a law drawer should be at least 10 inches above finished floor, the highest coat hook approximately 60 inches. A range of heights for both extremes is necessary. There should be one storage compartment per pupil. The compartments need have no doors or locks. All should be well ventilated.

Since many pupils will not use wheel chairs during all periods of the school day, there must be room in the clothing area or lobby for storing wheel chairs for about half the pupil capacity of the school component, plus a few spare chairs furnished by the school. While the chairs can be folded, it is likely that most will remain ready for use to permit children to get them and use them by themselves, without help.

Drinking fountains should also be in or convenient to this area. Each drinking fountain should have two positions, one for pupils standing and one for those seated in wheel chairs.

Food Service

Lunches will be prepared elsewhere, transported to the school in

heated and cooled containers or carts, and served in the teaching station area. Duplex electrical outlets are needed at the serving location to keep containers at proper temperatures. If carts are used, serving will be done directly from the carts. If individual containers are used, a serving counter or table will be required.

General Characteristics of School Components

1. Ceiling heights low: Nine feet clear in teaching stations, eight feet in lobbies
2. Sufficient (but not excessive) windows to afford pleasant views to outside (important for children otherwise home-bound) with low sills
3. Glare-free natural lighting
4. Protection from excessive solar heating
5. Artificial light to maintain proper quality and quantity of illumination; avoid excessive glare and contrast
6. Acoustical control which will absorb excessive noise, assure proper hearing, and maintain a reasonable ambient noise level
7. Clocks in all education spaces, mounted at heights appropriate for children
8. Air conditioning and supplementary heating and ventilation to maintain proper temperature, humidity and air motion
9. Vision panels in room doors

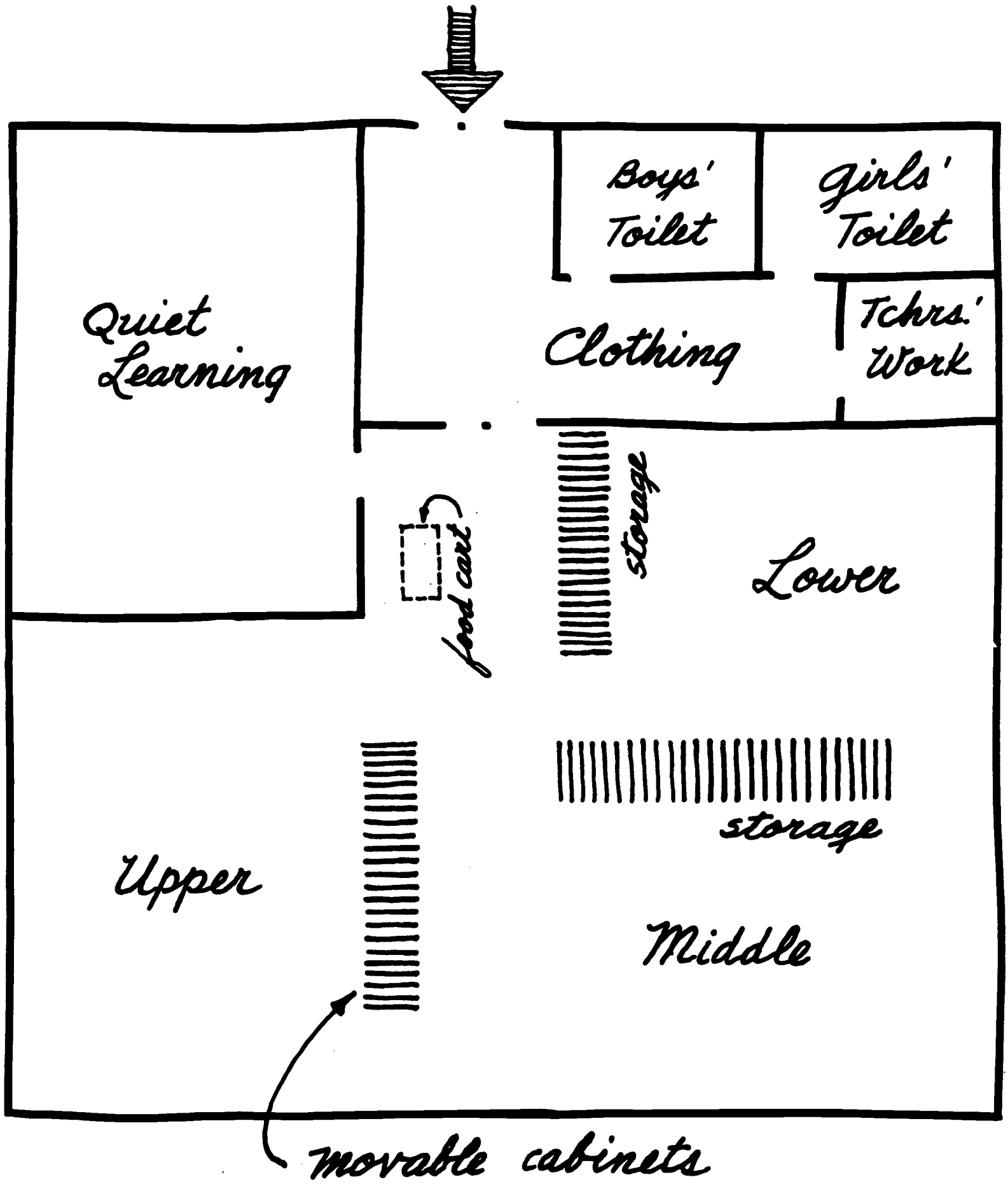
10. Doors sturdy yet light enough to be easily manipulated by handicapped children; and equipped with kick-plates of superior quality, lever handles rather than knobs, large pulls for closing, panic bars at exterior doors

11. Light switches at lock sides of doors

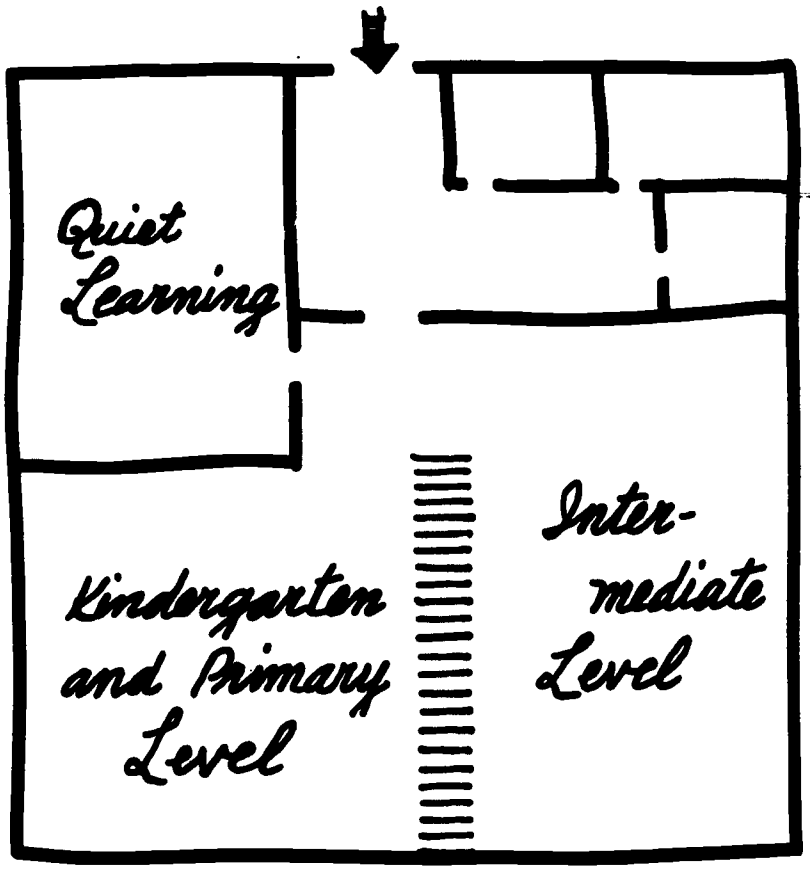
12. Minimum of two duplex electric outlets per teaching station, three to four preferred, to permit full use of electrical teaching aids; some outlets, suitably protected, at counter heights for pupil use

13. Ample storage space both in cabinets in teaching stations and in store rooms

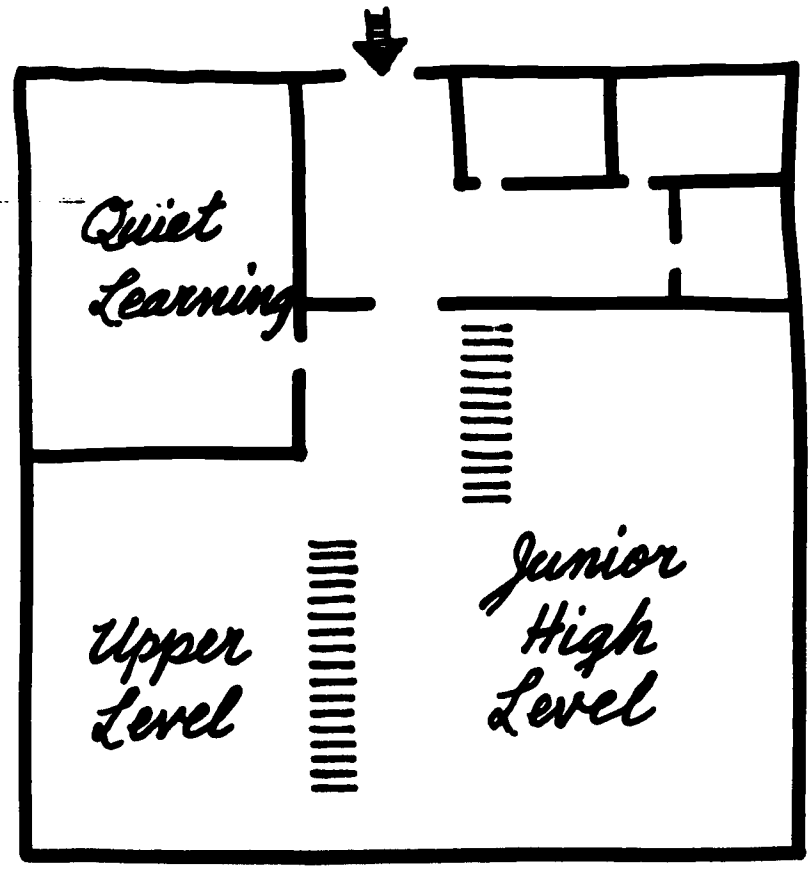
14. Floors should be non-slippery throughout: Vinyl tile suitable, non-slip ceramic tile in toilets, consider non-slip terrazzo in lobbies and heavily travelled areas (terrazzo not suitable for toilet floors)



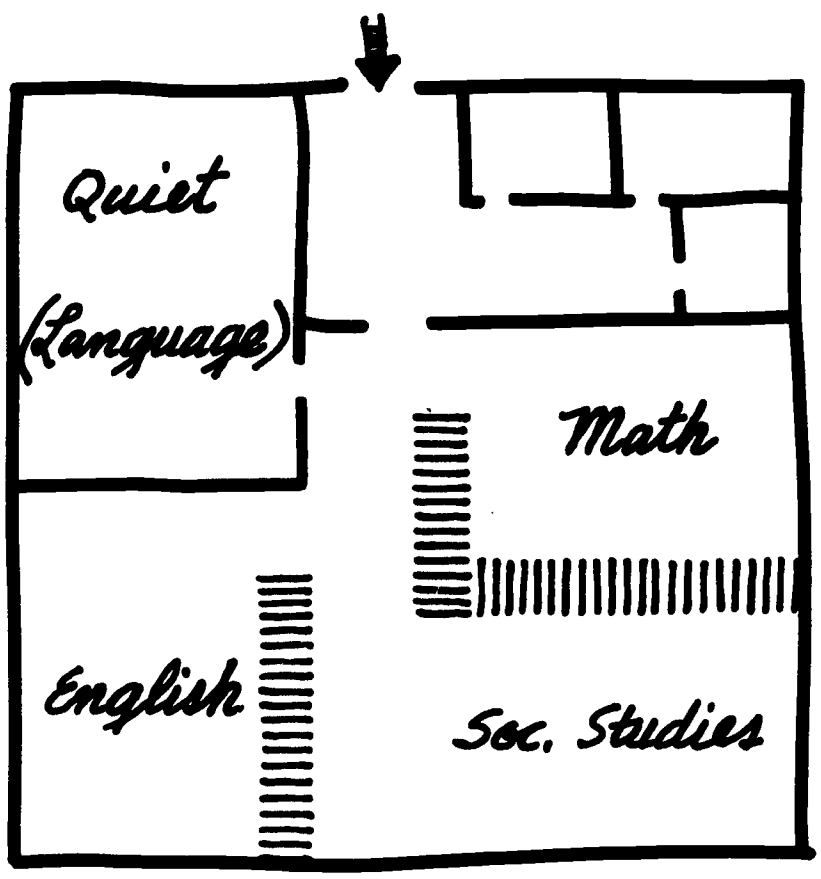
SCHOOL COMPONENT - PHASE I



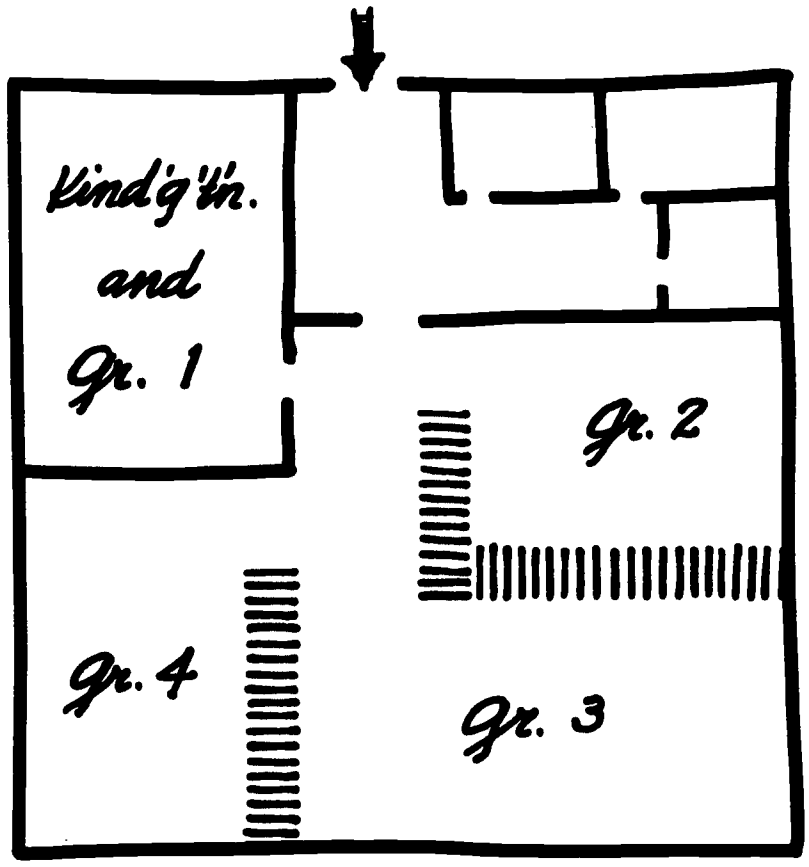
ELEMENTARY LEVELS



SECONDARY LEVELS

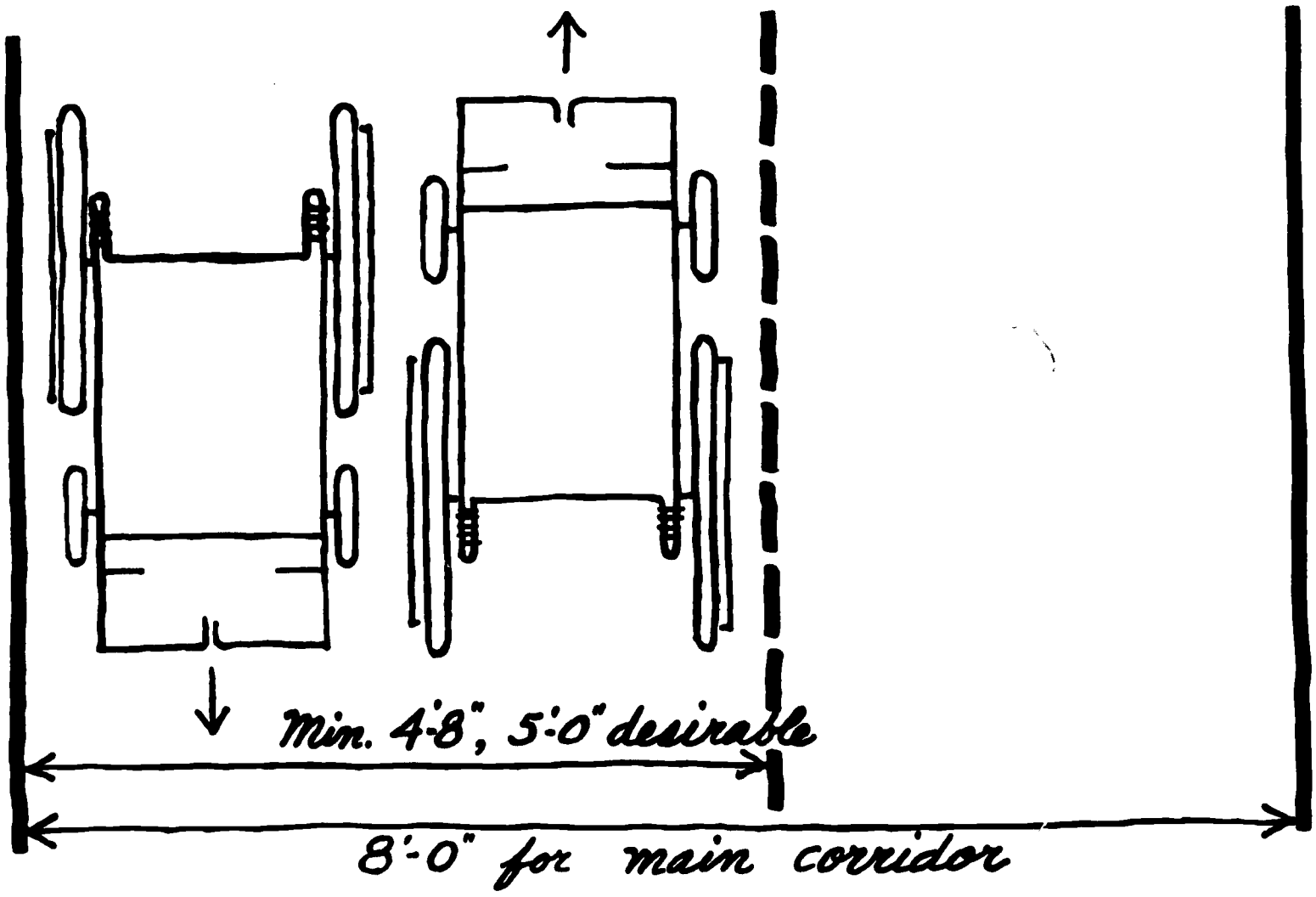


ENTIRE AREA
UPPER LEVEL

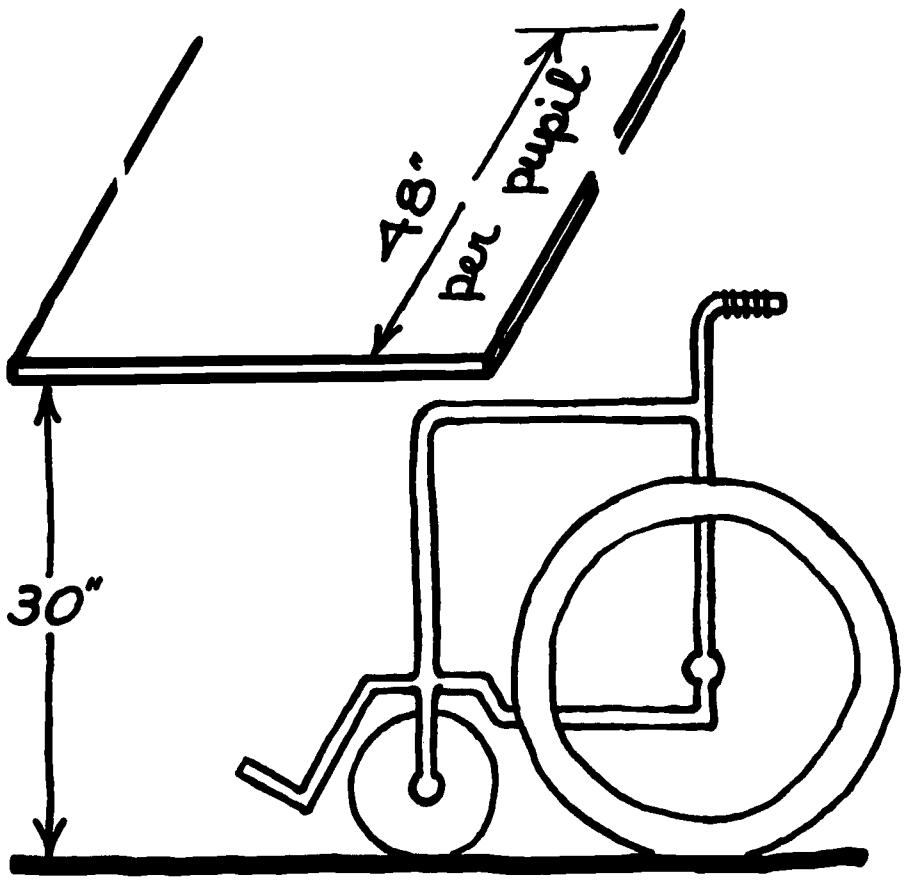


LOWER LEVEL,
GRADE ORGANIZATION

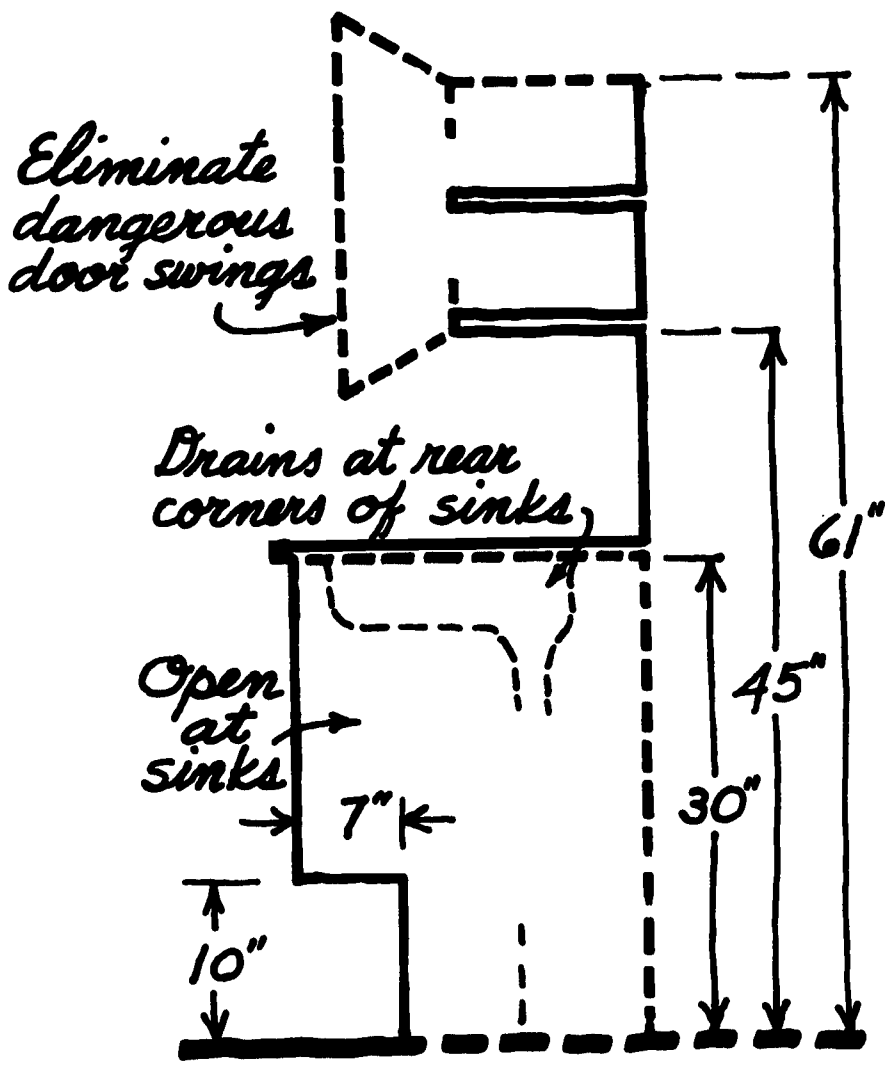
SCHOOL COMPONENTS - VARIATIONS



SAFE PASSAGE



WORK TOPS - all types, including sewing machines, etc.



HEIGHT LIMITS

CRITICAL DIMENSIONS - WHEEL CHAIRS

Modify conventional standards accordingly

WORKING HEIGHTS* - ELEMENTARY SCHOOLS

ITEM	KINDERGARTEN			GRADES 1-3			GRADES 4-6		
	MINIMUM	OPTIMUM	MAXIMUM	MINIMUM	OPTIMUM	MAXIMUM	MINIMUM	OPTIMUM	MAXIMUM
Cabinet, display (top)		54			56			66	
Cabinet, display (bottom)		26			29			34	
Cabinet, pupil use (top)			50			56			65
Chairs and bench	10	11	11	10	12	13	12	14	16
Chalkboard (top)	63	70		63	73		63	77	
Chalkboard (bottom and chalkrail)	20	22	25	24	25	26	28	29	30
Counter, cafeteria	21	27	32	25	31	34	29	36	39
Counter, classroom work (standing)	20	24	26	24	26	29	28	30	34
Counter, general office	20	27	32	24	31	34	28	36	39
Desk and table, classroom	17	18	19	18	20	22	21	23	25
Door knob	19	27	32	24	31	35	28	36	40
Drinking fountain	20	24	27	24	27	29	28	32	34
Fire extinguisher (tank)	RECESSED AT BASEBOARD HEIGHT								
Hook, coat	32	36	48	38	41	51	47	48	58
Lavatory and sink	20	23	25	24	26	27	28	29	31
Light switch	27	27	46	31	35	49	36	40	56
Mirror, lower edge			35			38			43
Mirror, upper edge	46			56			65		
Panic bar	21	27	32	25	31	34	29	36	39
Pencil sharpener	20	27	33	25	31	35	28	36	40
Rail, hand and directional	20	21	32	24	24	34	28	29	39
Shelf, hat and books		41	48		46	51		54	58
Soap dispenser	20	27	33	25	31	35	28	36	40
Stool, drawing		19			21			26	
Table, drawing		26			29			34	
Table and bench, work (standing)	25	26	28	26	29	32	30	34	38
Tackboard (top)	72	84		72	84		72	84	
Tackboard (bottom)	20	22	25	24	25	26	28	29	30
Telephone, wall mounted			35			37			43
Toilet stall, top of partition	44	44		52	52		61	61	
Towel dispenser	23	27	46	28	31	49	33	36	56
Urinal (bottom)				3	3-15	17	3	3-17	20
Wainscotting	54	54	54	54	54	54	54	54	54
Water closet (seat)	10	10 ½	12	11	11 ½	12	13	13 ½	14
Window ledge			29			30			34

*IN INCHES

WORKING HEIGHTS* - SECONDARY SCHOOLS

ITEM	JUNIOR HIGH SCHOOL GRADES 7-9			SENIOR HIGH SCHOOL GRADES 10-12		
	MINIMUM	OPTIMUM	MAXIMUM	MINIMUM	OPTIMUM	MAXIMUM
Cabinet, display (top)		74			77	
Cabinet, display (bottom)		38			39	
Cabinet, student use (top)			74			79
Chair and bench	13	15	17	14	16	18
Chalkboard (top)		80			82	
Chalkboard (bottom and chalkrail)	31	32	34	32	34	36
Counter, cafeteria	32	40	45	33	42	48
Counter, classroom work (standing)	31	34	38	32	36	39
Counter, general office	31	40	45	32	42	49
Desk and table, classroom	23	26	28	24	27	29
Desk, typing		26			26	
Door knob	30	40	46	31	42	49
Drinking fountain	32	36	40	32	40	44
Fire extinguisher (tank)	RECESSED AT BASEBOARD HEIGHT					
Hook, coat	53	54	64	54	55	68
Lavatory and sink	32	33	35	32	35	38
Light switch	40	46	64	42	50	68
Mirror, lower edge			48			52
Mirror, upper edge	71			71		
Panic bar	32	40	45	33	42	48
Pencil sharpener	32	40	46	32	42	49
Rail, hand and directional	31	32	45	32	33	48
Shelf, hat and books		60	64		62	68
Soap dispenser	32	40	46	32	42	49
Stool, drawing		28			29	
Table, drawing		38			39	
Table and bench work (standing)	36	38	41	37	39	42
Tackboard (top)	72	84		72	84	
Tackboard (bottom)	31	32	34	32	34	36
Telephone wall mounted			48			52
Toilet stall, top of partition	67	67		69	69	
Towel dispenser	37	40	64	37	42	68
Urinal (bottom)	4	4-18	22	4	4-19	24
Wainscotting	60	60	60	60	60	60
Water closet (seat)	14	14 ½	15	14 ½	15	15
Window ledge			38			41

*IN INCHES

Educational Research Services, Inc.

VI

SCIENCE CLASSROOM

Just how the school will grow in phases to a pre-school to senior high school enrollment is not known. It is presumed however that it will take on groups on the ninth and tenth grade levels only as it grows beyond the elementary program. The small initial number of students at this level requiring specialized science instruction may not justify a fully equipped science room, particularly if the budget is low. Therefore, portable temporary science equipment may be substituted in some special alcove or study area in the initial component.

The multi-purpose science classroom should be equipped to handle all areas of the science curriculum, in elementary as well as secondary grades. The science classroom may also be used for other purposes including such subjects as mathematics.

Various methods or techniques of science learning will be employed including: teacher demonstration, student experimentation, study and discussion and much individual research. Materials for science for the elementary grades may be assembled in laboratory carts and transported to the elementary grades.

Equipment and furnishings must be flexible and suitable for this multiple use. The same basic equipment must be used for general science, biology, physics and chemistry.

Somewhat more space per pupil is desirable than in the conventional science room, both in respect to access to all elements of the room and in such areas as work tops, etc.; and work top heights, either fixed or fitted for adjusting height once or twice a year, should be determined by pupil needs as in other parts of the total school.

Special considerations for the science classroom include the following:

Classroom space for discussion, experimentation and other learning activity; movable tables in the center, seating for 15 students, half to be of wheel chair height

Demonstration desk with laboratory cart, hot and cold water, gas and electricity

Counters and sinks around the walls are recommended, four linear feet of counter space per student, with utility islands containing sink, hot and cold water, gas and electricity at eight foot intervals

Equipment must be adaptable for biological and physical sciences, should be selected for multiple use

Provide space for growing beds; consideration for the future so that a small greenhouse may be added; orientation so that sun may enter growing areas

Aquaria and cages for animals should be portable

Provide ample shelving, storage and display area since most experiments should be put away after use

Provide ample tackboard and chalkboard; the room may be used for other purposes besides science

Teaching aids should be conveniently located and some at wheelchair height, e.g., supplies convenient to demonstration table, roll-down projection screen, handy outlets for equipment

Portable exhaust fume hoods

Accessible first aid and safety equipment; consider safety requirements in location of electric outlets in necesary protective guards and screens, minimum obstructions

Provision for storing complete course materials, since one year physics might be taught, the next year chemistry

Good ventilation is needed

Special attention should be given to illumination to maintain light levels for work with microscopes and balances

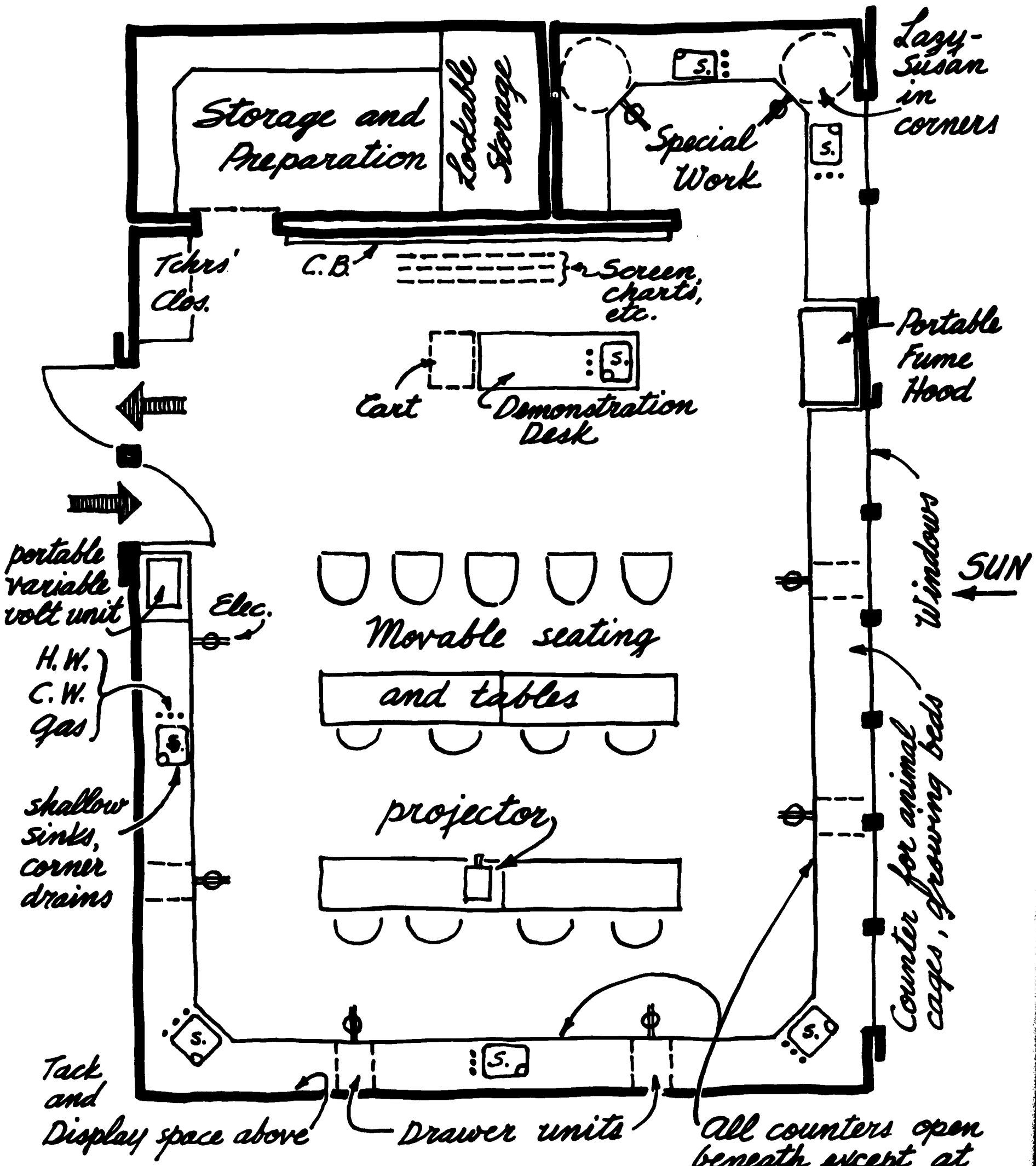
Interior finish for science classroom should be impervious to chemicals; asphalt tile should be avoided

Floor material which requires a high polish should be avoided to prevent glare and danger of slipping

Provision for audio-visual devices with thought to light control, ventilation when room is darkened and necessary electrical installation

Provision for special project area, for advanced students, etc.

Special emphasis must be given to height of all furnishings and equipment



MULTI-PURPOSE SCIENCE CLASSROOM-LABORATORY

(movable equipment in color)

VII

ARTS AND CRAFTS

The arts and crafts area would house facilities for fine and industrial arts for all grades within the school components. In addition to scheduled classes the facilities should be available for use in projects related to sciences, language arts, home arts, graphics for mathematics, social sciences, etc.

The activity in the arts and crafts room would include the following:

1. Fine arts, water colors, drawing
2. Related arts, basic decorating, stage scenery design, fashion design
3. Crafts -- art metal, jewelry making, leather working
4. Ceramics -- pottery, clay, modeling
5. Sculpturing
6. Weaving
7. Woodwork
8. Metalwork
9. Electronics
10. Graphic arts

The following outline has been prepared for the consideration of the architect in relation to these spaces:

A. The Purposes of Arts and Crafts

1. Demonstration of working with various materials and tools
2. Development of desirable safety habits
3. Development of creativeness in designing, planning and selecting useful and adequate material
4. Development of pride in achievement and a responsibility of handling equipment and tools
5. Development of an interest in avocational activities of a constructional nature
6. Increase in knowledge and understanding of products and processes of industry
7. Development of an understanding of the problems of industry
8. Provision of exploratory experiences for the student which will aid him in discovery of his own interests, abilities and attitudes toward jobs and industry

B. The Basic Areas

1. Teacher-student planning area

Teacher's desk and chair
Storage cabinet
Demonstration or planning table
Student tables and chairs
Chalkboard and tackboard
Bookcases

Files
Display case
Adjustable type storage
Work sink with hot and cold water
Electric outlets

2. Painting and drawing area

Art table and bench
Easels
Project storage
Paper, paint and paint brush storage
Tackboard

3. Crafts area -- woodcraft, metalcraft, jewelry making and graphic arts

All-purpose benches, wood tops, plastic tops and metal tops
Crafts material storage
Tool storage
Spatter booth
Electric outlets at student stations
Wood and metal vice
Project storage cabinet
Finishing material storage
Lumber and plywood rack
Textile, leather and plastic storage
Miscellaneous hand tools
Wood lathe
Buffer
Sander
Circular saw

4. Ceramics area

Electric kiln
Potters wheel and bench
Damp box
Ventilated finishing booth and storage
Drying shelves

5. Electronics

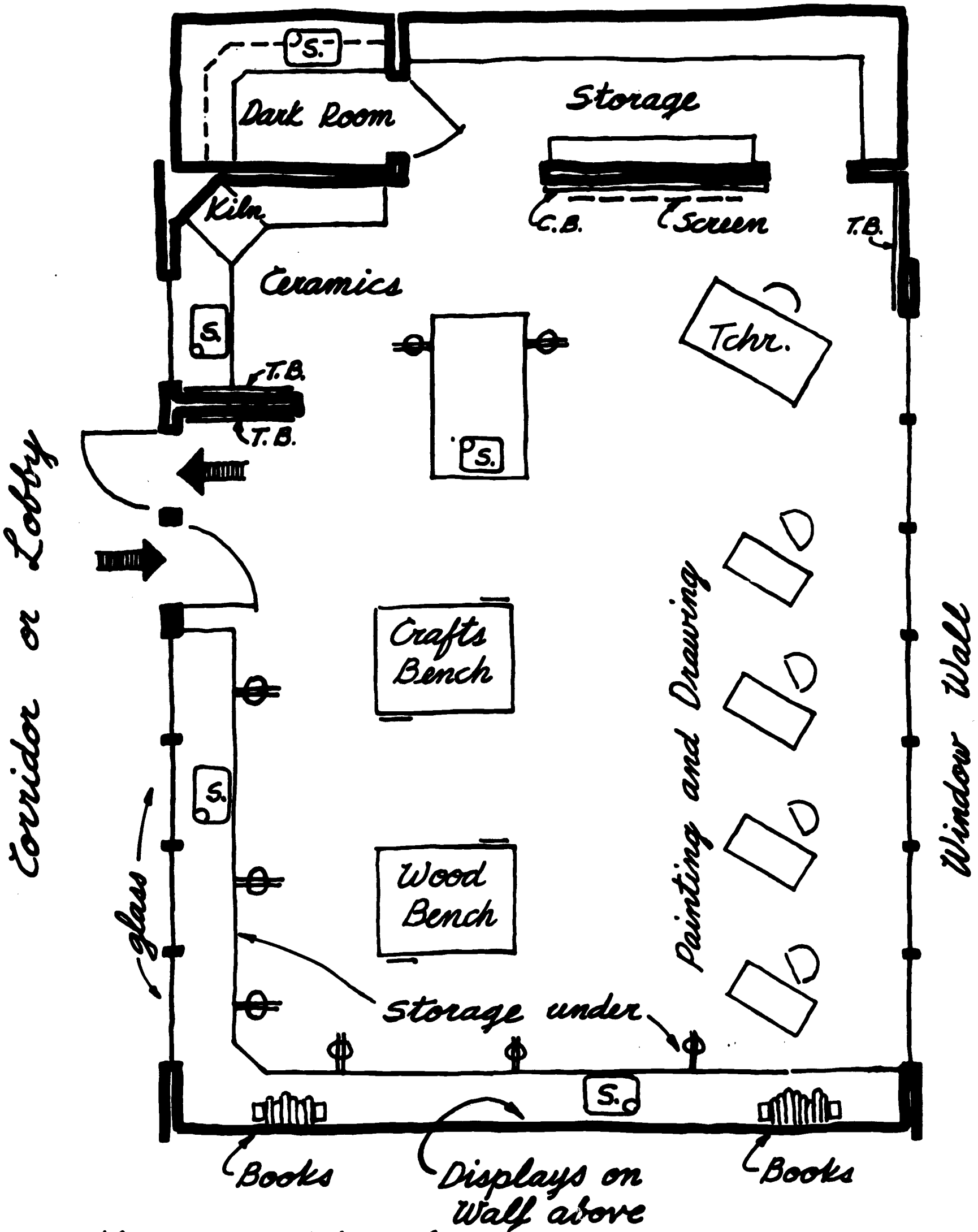
Electrical test bench
Low voltage wiring board
Soldering equipment
Miscellaneous testing and hand tools
Exhaust system

C. General Provisions for Arts and Crafts

1. Lockable tool panels in wall cabinets
2. Project storage and small parts area
3. Finish area where painting may be expected
4. Special metal enclosure in automotive area, with separate ventilation, required for washing parts in gasoline or other flammable liquid
5. Metal waste containers required
6. Screen and darkening provisions for audio-visual instruction
7. Locker and wash-up areas
8. Natural lighting to eliminate glare at the working surface, bilateral lighting satisfactory
9. Fluorescent lighting
10. Gas, water and electrical provisions
11. Drinking fountain
12. Large exit door in crafts area
13. Rubber safety mats around machines

14. Drawers, pegboards and cabinets for non-ambulatory students and up to 36 inch counters for ambulatory students

15. Clock, mirror, lockers, etc.



Movable equipment in color

MULTI-PURPOSE ARTS AND CRAFTS ROOM

VIII

HOMEMAKING ROOM

The most satisfactory homemaking room is arranged for exploratory home economics courses centered on family requirements. The space and equipment arrangement should facilitate teaching several subjects, often at the same time.

The equipment and furnishings should be consistent with teaching needs, durable and modern, to include the newest appropriate everyday developments in food preparation, home furnishings and equipment, appliances, clothing, personal grooming. Attention must be given to such items as swing-out shelves for the refrigerator unit, low wall cabinets, electric outlets flush with counter tops, insulated sinks, push button ranges with burners built into counter top, etc.

Uses of homemaking facilities will include the following:

Study selection, purchase and care of household goods, equipment and furnishings

Planning family diets and menus

Learn selection, preparation, serving, conserving and storage of foods

Learning principles of home management

Learning selection, preparation, care and remodeling of clothing

Developing basic knowledge of child care and care of the sick

Personal and family relations

Each of the curriculum areas requires some special space and equipment. The homemaking room may be divided into the following work areas:

A. Food area

1. Unit kitchen with built-in cabinets, worktable, sink, range, a table with four chairs; with work counters, sink bowl, range top and comparable elements designed at proper height and without aprons, doors or other obstructions beneath counters, so pupils in wheel chairs may work at proper height and distance from tasks

2. Refrigerator-deep freeze unit, swing-out shelves, located near unit kitchen

3. Towel-drying closet or simple rack, with good ventilation

4. Floors of vinyl or grease-resistant asphalt tile

5. Cabinets in unit kitchen, designed for easy reach from a seated position, to accommodate:

Dishes	Linens
Glassware	Refuse container
Supplies	Trays
Utensils	Cleaning materials

Appliances

6. Apron storage

7. Three electric outlets for the unit kitchen

B. Living-dining area

1. Space to be simple and attractive

2. Space furnished with living area furniture, table and chairs

3. Storage for magazines, books and teachers' materials

C. Clothing and textiles area

1. Insure adequate light at working surfaces

2. Provide space for designing and making of clothes, planning of clothing expenditures, selection of materials, care and repair of clothing

Drawing table	Mirror
Filing space	Sewing machine
Teacher's table	Table
Tote boxes	Storage for garments (5 feet of rod space)
Ironing board	

D. Laundry-workshop-storage area

1. Storage in storeroom

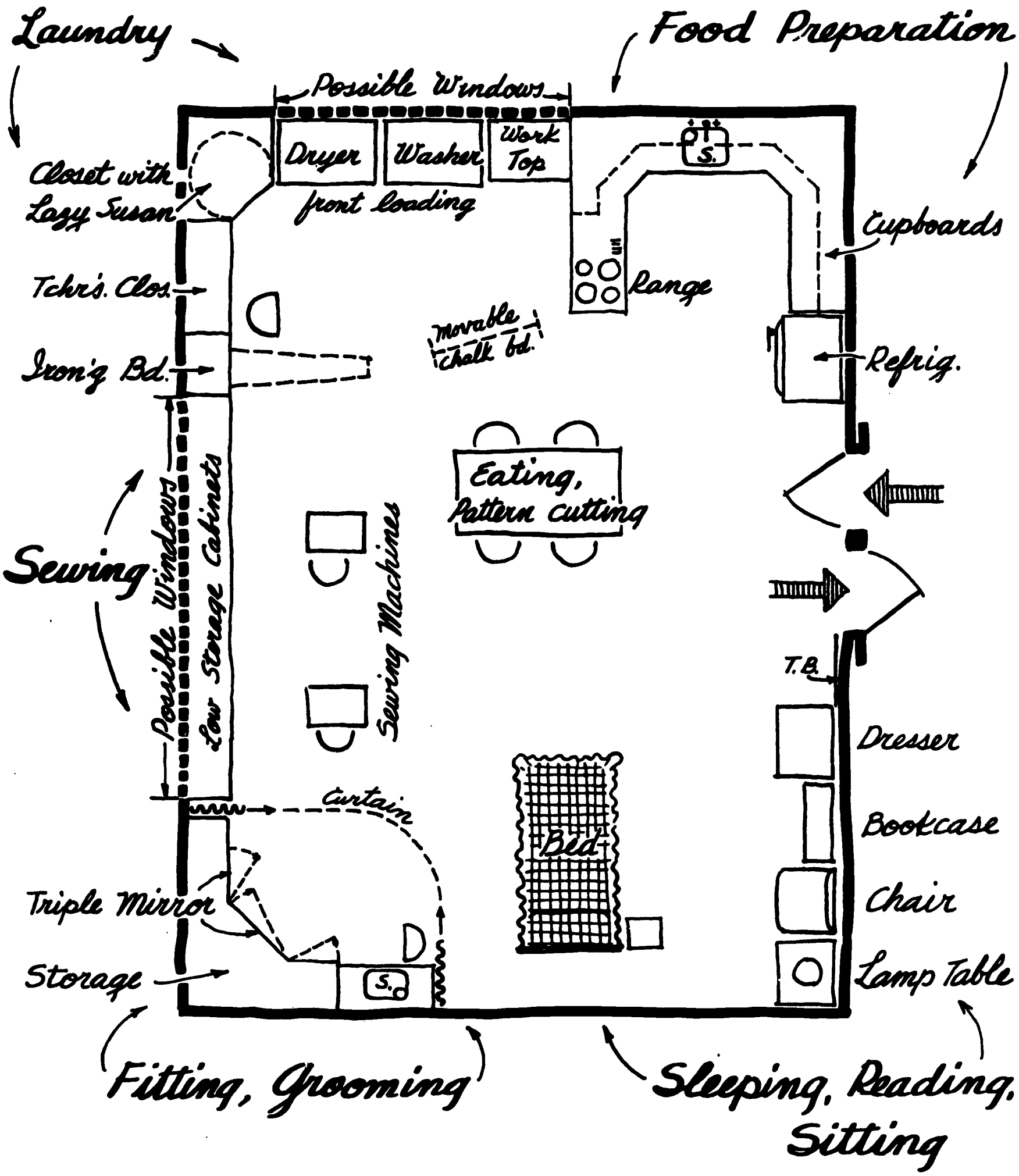
Furniture, upholstering, etc.
Roll-away bed, bedding, trays, etc., for home care of sick
Paint and refinishing supplies

2. Washer and dryer in laundry area

E. General

Display	Teacher's closet
6-foot chalkboard	Cleaning equipment storage
Book storage	Magazine display

Pegboard for storing utensils, simple tools, etc.



MULTI-PURPOSE HOMEMAKING ROOM

Developed around Daily Living Activities

IX

INSTRUMENTAL MUSIC ROOM

Music education for esthetic and cultural values fills a significant place in the school curriculum. Moreover the creating of music, the learning of teamwork, the desirability of individual achievement, create a most valuable lesson for the preparation of life ahead.

Due to necessities of site and budget, music education will have to share facilities, with exception of an instrumental practice room, with other spaces in the school component and may have to utilize the Foundation's auditorium for occasional public presentations.

The size, shape and construction materials are important factors in designing the instrumental music practice room for the best sound control possible.

Consideration should be given to the following:

A soundproof large door is essential and a soundproof window into the corridor is desirable

A window for natural ventilation and light is desirable

Provide ample electric outlets so room can serve as a music listening room for phonographs and tape recorders

Special acoustical treatment is necessary to prevent interference with other areas and to deaden reverberation

A locked storage cabinet should have adjustable shelving which must vary according to sizes of instruments and for sheet music supplies

Furniture and equipment should include a piano, chairs, counter for instruments and books, music racks, small table, music lamp, clock and instructor's desk

X

INSTRUCTIONAL MATERIALS CENTER

The instructional materials center will embrace not only all the functions usually carried on in a school library but also such other functions as listening to tapes and records, small group conferences, independent study and research.

The instructional materials center will also be the central area for selecting, purchasing distributing, maintaining and housing the various instructional materials and media.

The individual in charge is thus not a librarian in the usual sense, but a person of knowledge of at least the sources of information; more concerned to see that pupils have access to and ingest the information they need rather than impressed with the sanctity of books and other sources; competent to instruct in effective research techniques, note taking, outlining, use of catalogs, etc.

This person must work well with all the other teachers in the school, for the instructional materials center will be used by the entire enrollment, teachers included.

Book Area

The book area requires:

Storage for a minimum of 3,000 volumes, in stacks

Card catalog

Reading tables seating 15 students of varying adjustable heights to allow multi-grade use and wheel chair use

Immediate access to research and conference cubicles

Access to outdoor reading and study areas

Space and furniture for use of dictionaries, encyclopedias, other standard reference works

Perhaps two study carrels in conjunction with stacks

Periodical and newspaper racks convenient to the reading tables; for recent and current issues; older issues may be micro-filmed and disposed of

Lighting of good quality, high intensity

Adequate ventilation

Workroom-Office

The workroom-office is the headquarters for the individual in charge; from it the entire instructional materials center is to be supervised and the flow of marerials to and from the rest of the school is to be controlled. Equipment and utilities include:

Work counter or table

Sink, hot and cold water

Wall shelving for materials in process of cataloging or repair

Storage space for mobile carts for transporting materials

Desk, chair, file cabinet

Issue desk immediately adjoining, in the path of circulation into the instructional materials center, for issuing and receiving books and audio-visual materials

Television Facilities

Television facilities ultimately should be of a type to receive open- and closed-circuit signals in the instructional spaces within the school. The television system may be planned in combination with radio and intercommunication facilities or thtough coaxial cables with a jack input and output system.

The television system should be flexible to permit functions which perhaps during the initial phase of construction might not be economically feasible. However without major alterations functions served by the area should eventually include:

1. Transmission of closed-circuit television from all learning spaces
2. Reception of open- and closed-circuit television to all learning spaces
3. A television control space and facilities for audio-visual production.

The major functions of the television facilities will be as follows:

1. Some direct instruction using the classroom teacher for further discussion, clarification and individual assistance
2. Instruction by the classroom teacher with television facilities to be used for enriching the program of instruction

3. Using television facilities for outside groups (e.g., student nurses, special education teachers, medical analysis, etc.) to observe students in the various learning and test situations

Small Television Control Room

This area will house control equipment and personnel to operate it. It is the nerve center for the visual and sound elements of the television system. The control room will be used to coordinate both remote and studio signals.

Features include:

Ceiling height of nine feet sufficient

Wiring of sufficient capacity for type of equipment to be installed

Air conditioning to control heat output of electronic apparatus

Acoustical treatment and separation from external noise source

Location adjacent to spaces into which it may be expanded

Audio-Visual Production Space

This space will serve television programs originating in the school and will also be used for production of charts, displays, film strips, motion pictures, etc.

Its features should include:

Work space for art work and graphics, models, sets, apparatus to supplement facilities in arts and crafts room

Materials storage for films, tapes and materials maintenance space for repairing such materials

Space for previewing films, etc.

Darkroom for limited photographic processing

Space for repairing equipment

Equipment for Television and Audio-Visual Production

A. In spaces where children are learning

1. Convenient receptacles in school components, science room, arts and crafts room, homemaking room for originating and receiving
2. Television monitors, 24 inch, both ceiling-hung and portable
3. Provisions for concealed cameras in walls and for mobile cameras
4. Separate camera control unit for control of voltage deflection
5. Lenses as required
6. Intercommunication system to master control
7. Audio equipment, desk and ceiling-mounted microphones

B. Basic equipment

1. Photographic equipment -- enlarger, contact printer,

35 mm camera, developing facilities

2. Printing and reproducing -- photocopy machine for copies and transparencies for overhead projectors, sign making and poster making equipment

3. Projectors -- motion picture, film strip, slide, opaque, overhead, micro

4. Miscellaneous audio -- tape recorder, record players, radios, portable P.A. equipment

5. Accessories -- portable screens, projection tables and stands, portable lighting equipment, teaching machines, easels, work tables, flannel and magnetic boards, maintenance equipment, drawing tables

XI

ADMINISTRATIVE SPACES

A central location is desirable for administration, closely related to the instructional materials center.

Administration

A. General Office

1. Good lighting and ventilation
2. Space for secretarial desks, chairs, worktables, files, etc.
3. Storage of records
4. Pleasant reception area with comfortable chairs, exhibits
5. Space and equipment for communications -- mail, bulletins, telephone messages, public address
6. Space for duplicating equipment with separation from quiet areas
7. Supply and book storage
8. Counter separating reception area and work area

B. Principal's Office

1. Large enough for small conferences
2. Near conference and board room
3. East access for public, students, faculty
4. Entrance controlled from general office -- separate entrance from corridor
5. Storage closet, desk, conference table, chairs, book-cases

C. Guidance Office

1. Space to serve for conferences and occasionally as a researcher's office
2. Comfortable and attractive furnishings
3. Adequate furniture and storage facilities

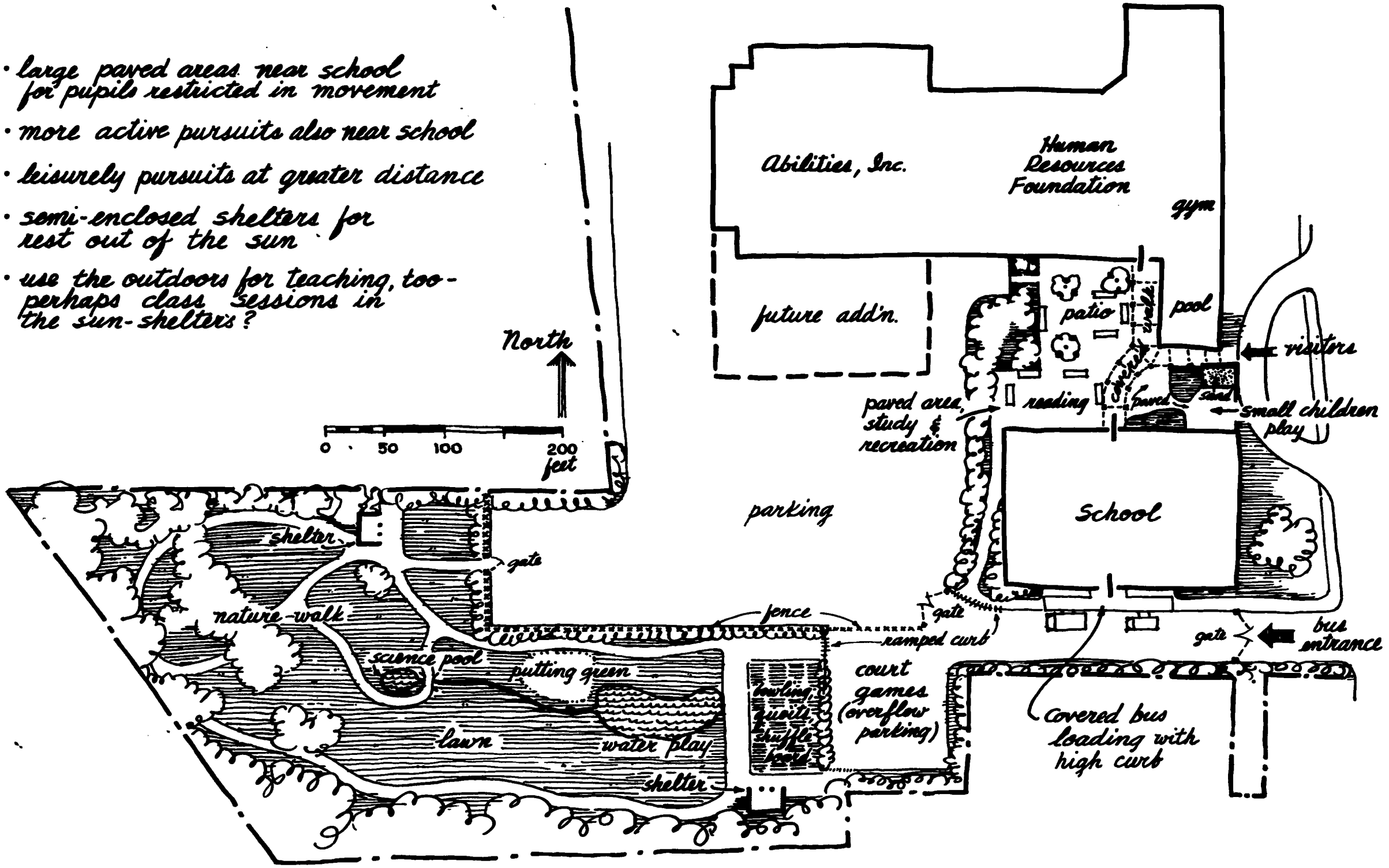
D. Health Room

1. Nurse's desk
2. Toilet large enough for handicapped pupils
3. Lockable cabinet for medicines and supplies
4. One end curtainable to enclose a space large enough for one cot
5. Space for eye testing

E. Conference and Observation Room

1. To serve small visiting groups of student teachers, nurses, parents, staff and others from other schools, etc.
2. To be equipped eventually, if not initially, with closed-circuit television reception so activities in school components may be observed without upsetting pupil work
3. Level floor satisfactory because room is small
4. Attention to acoustical control, lighting, air conditioning
5. May be an interior room
6. -Directly accessible to public lobby and general office

- large paved areas near school for pupils restricted in movement
- more active pursuits also near school
- leisurely pursuits at greater distance
- semi-enclosed shelters for rest out of the sun
- use the outdoors for teaching, too - perhaps class sessions in the sun-shelters?



SUGGESTIONS FOR USE OF SITE